

A study on the potential of the periostracum of *Perna viridis* as a biomonitoring material for Pb in tropical coastal waters based on correlation analysis

Abstract

The periostracum is the outermost layer overlying the inner prismatic and nacreous layers of the shells of bivalves. In the present study, the distributions of Cd and Pb in the soft tissues (ST) and periostracum of the green-lipped mussel *Perna viridis* sampled from 15 sampling sites in the coastal waters of Peninsular Malaysia were determined. The concentrations of Cd (0.21-10.87 mg/g dry weight) and Pb (1.16-40.20 mg/g dry weight) in the periostracum were generally higher than those in the ST (Cd: 0.10-5.55 mg/g dry weight; Pb: 2.53-18.62 mg/g dry weight). Based on correlation analysis from nine geographical populations, the higher correlation coefficients (R values) between the periostracum-geochemical fractions of the sediments than between the ST-geochemical fractions of the sediments indicated that the periostracum could be a potential biomonitoring material for Pb. Hence, the present results supported the use of the periostracum of *P. viridis* as a potential biomonitoring material for Pb but not for Cd. However, more studies are warranted to verify its usefulness for the biomonitoring of heavy metal pollution in tropical coastal waters.

Keyword: Biomonitoring material; Cd; Pb; Periostracum; *Perna viridis*